



TITLE:

Studies on the Swelling of Polyvinyl Alcohol. (V) : Influence of the Removal of Soluble Parts on the Effect of the Heat Treatment of Polyvinyl Alcohol Films

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CITATION:

Sone, Yasuo ...[et al]. Studies on the Swelling of Polyvinyl Alcohol. (V) : Influence of the Removal of Soluble Parts on the Effect of the Heat Treatment of Polyvinyl Alcohol Films. Bulletin of the Institute for Chemical Research, Kyoto University 1958, 35(5-6): 161-162

ISSUE DATE:

1958-03-30

URL:

<http://hdl.handle.net/2433/75597>

RIGHT:

ABSTRACTS

On the Demixing of the Solution of Mixture of Polyvinyl Alcohol and its Derivatives

Noboru MORI and Takeshi TANAKA

(Sakurada Laboratory)

Journal of the Society of Textile and Cellulose Industries,

Japan (Sen-i Gakkaishi), 13, 130 (1957)

The demixing of the solution of the mixture of polyvinyl alcohol and its derivatives such as polyvinyl formal, polyvinyl cyanoethylether and partially saponified polyvinyl acetate was studied, and was found that it was influenced by the kind of substituent, the degree of substitution and the ratio of two polymers.

The nature of fibers spun from the solutions, such as the cross sectional forms and dyeability was influenced greatly by the demixing in the fiber structure.

Relation between the Crease Recovery of the Resin Finished Fabric and the Elastic Recovery of Yarn

Waichiro TSUJI, Masazo IMAI and Shinjuro TAMURA[†]

(Sakurada Laboratory)

Resin Finishing and Application, Japan (Jushi-Kakō), 6, 290 (1957)

The degree of the elasticity of elongation of the viscose rayon single filament does not increase remarkably by the urea resin finishing. But the elasticity of the zig-zag form yarns released from resin-finished fabrics is remarkably increased, comparably with the degree of the elastic recovery of resin-finished fabrics. Therefore, we conclude that the improvement of the elastic recovery of the resin-finished fabrics depends chiefly upon the elastic stability of the zig-zag form of the yarn and single filament which compose the fabric.

Studies on the Swelling of Polyvinyl Alcohol. (V)

Influence of the Removal of Soluble Parts on the Effect of the Heat Treatment of Polyvinyl Alcohol Films

Yasuo SONE and Ichiro SAKURADA

(Sakurada Laboratory)

Chemistry of High Polymers, Japan (Kobunshi Kagaku), 14, 92 (1957)

Films were prepared from a fractionated polyvinyl alcohol of DP 1288, subjected to a light heat treatment at 40°C for 10 minutes and then immersed

ABSTRACTS

in water at 30°C for the removal of water soluble parts of films. The extracted films were then air-dried and subjected to heat treatment at 40, 80, 120, 160 and 200°C for 10 minutes. Original films were also similarly treated. The swelling, solubility and density of the two series of films were compared. In the case of heat treatment at lower temperature, there was a distinct difference between the two series. Extracted films showed lower swelling and higher density and crystallinity. Similar experiments were also carried out with an unfractionated polyvinyl alcohol of DP 1550 to obtain similar results.

Studies on the Swelling of Polyvinyl Alcohol. (VI)

Swelling of Films Prepared from Water-Soluble and Insoluble Parts of Polyvinyl Alcohol Films

YASUO SONE and ICHIRO SAKURADA

(Sakurada Laboratory)

Chemistry of High Polymer, Japan (Kobunshi Kagaku), 14, 96 (1957)

A fractionated polyvinyl alcohol of DP 720 was used as a starting material and separated into water-soluble and insoluble parts by the method given in the previous report. DP's of the water-soluble and insoluble parts were 540 and 770, respectively. Films were prepared from these two kinds of polyvinyl alcohol and subjected to heat treatment to compare the swelling, solubility and crystallinity of them. In the case of heat treatment at lower temperature, there was a distinct difference between the two. Films from water-soluble part showed higher swelling and lower density and crystallinity. It was attributed not to the difference of molecular structure but to the difference of molecular weight.

Studies on the Swelling of Polyvinyl Alcohol. (VII)

Influence of the Residual Acetyl Groups on the Swelling of Polyvinyl Alcohol Films

YASUO SONE and ICHIRO SAKURADA

(Sakurada Laboratory)

Chemistry of High Polymer, Japan (Kobunshi Kagaku), 14, 145 (1957)

Films were prepared from the following two kinds of polyvinyl alcohol and subjected to the heat treatment to see the influence of residual acetyl groups on the swelling of polyvinyl alcohol films: 1. Fractionated and unfractionated polyvinyl alcohols (DP 235-3630) with some residual acetyl groups (0.05-5.95 mol %), 2. Polyvinyl alcohol with no residual acetyl groups, obtained by the resaponification of 1. When the temperature of the heat treatment of films is low, the residual acetyl group, even when its concentration is very low (0.2-0.3